

PAGE MUNICIPAL
AIRPORT
**MASTER PLAN
UPDATE**
2000-2020



Forecasts

3.1 INTRODUCTION

The basis for effective airport planning is forecasting the timing and level of aviation demand. The forecasts serve to determine the timing of investment in airport development to meet aviation needs as the demands are realized. This effort strives to maximize efficient use and return on capital investments while minimizing premature costs and unnecessary operating expenses.

3.2 METHODOLOGY

The forecasting analysis for the Master Plan Study evolved into a two-part process. It began with projections derived from the Federal Aviation Administration (FAA) Terminal Area Forecast (TAF). After reviewing the projections' base numbers, the Study's Planning Advisory Committee (PAC) recommended a different approach in formulating the forecasts. The preferred methodology was for the projections to be based on direct input from the airport users.

Development of forecasts begins with data collection to include aviation and activity indicators for the area served by the airport. The historical activity levels logged in the FAA Terminal Area Forecast Data system (TAFDS), which is available from the FAA Office of Aviation Policy and Plans, becomes the foundation for the forecasts. Analytical and judgmental techniques are then applied in evaluating the relationships between aviation indicators and projected growth. The analytical technique is more mathematical, whereas the judgmental technique employs a subjective process. After further evaluation of outside factors and the extent they will impact aviation demand growth, a preferred forecast is then selected. This last step is the most difficult because it relies on judgment of the probable impact from external factors.

The first part of the analysis for this study began with historical activity levels for Page Municipal Airport from the FAA TAF, Fiscal Years 1998-2015. Additional aviation data and activity indicators were also gathered for the Airport's service area, which is described under the inventory chapter. Other sources included the Arizona State Aviation Needs Study (1995), Arizona Air Service Study (1998), Arizona Department of Economic Security Research Administration, the previous Page Municipal Airport Master Plan Study, and airport staff. Forecasts based on the trend line formula and historical aviation levels were then generated and incorporated into the analysis, along with aviation indicators and forecasts from TAF and other sources. Projections were then configured based on the relationship analysis between the different forecasts, aviation indicators, and the base activity levels.

These forecasts were presented to the Committee during the second PAC meeting, at which time the base numbers that went into formulating the projections were rejected. The Committee questioned the accuracy of the historical activity levels logged in the TAFDS. Concern was expressed that the numbers did not reflect the true level and nature of the aviation activity in Page Municipal Airport. If the base numbers were questionable, then the validity of the forecasts were also questionable. Therefore, the PAC recommended a new set of projections be formulated based on activity levels provided by the airport users. In addition, PAC suggested that the FAA's categories be expanded to better describe the activity at the airport.

Under the PAC's recommendation, the Study team surveyed the airport users on the level and nature of their operations, including their projections of future activity. Follow-up interviews

were also conducted as needed. The forecast analysis proceeded with configuring a new set of projections based on the new information. Analytical and judgmental techniques previously applied were also used in evaluating the relationship between the different projections, aviation indicators, and new base activity levels, which went into formulating the Master Plan 2000 forecasts.

Beyond the forecasting process, the Airport should exercise the monitoring of actual activity levels over time. This is because regardless of the methodology utilized in formulating the aviation demand forecasts, it is virtually impossible to predict with certainty the levels of activity to take place at the airport, especially when looking twenty years into the future. Through monitoring, the Airport will be able to update and refine the forecast demand levels and timing of development thresholds, allowing for an effective and continuous planning process.

3.3 AVIATION TRENDS AND ACTIVITY INDICATORS

Understanding trends in the aviation industry and socioeconomic factors on the national level helps establish the rationale and logic that goes into formulating the aviation demand forecasts. Although the national trends may not be a direct indication of the local activity, it provides guidance on the level and nature of the projections.

3.3.1 Aviation Industry

The aviation industry has been going through a robust period for the last few years and the FAA forecasts more of the same for the next twelve years. Both the major and regional/commuter airlines are experiencing traffic growth and increasing load factors, the result being improved financial conditions for the airlines. Consequently, there have been higher orders and deliveries of aircraft and numbers of airline pilots. Even general aviation appears to be turning around and sharing some of the same prosperity. Increases in both business and recreational flying, including the number of student pilots, provides positive statistics for general aviation.

Major Airlines

Although major airlines do not operate in Page Municipal Airport, it should be noted they are experiencing significant growth. For the past five years, traffic growth has averaged 5.3 percent annually in domestic markets and revenue passenger miles (RPMs) have increased 4.9 percent annually. However, the airlines have maintained slower growth in capacity resulting in higher load factors with a new all time high of 70.9 percent in 1998. The higher passenger yields have generated record profits for the airlines. Over the past five years, the air carriers reported cumulative operating profits of almost \$31 billion. The improved financial condition of the industry is reflected in the increase in orders and deliveries of commercial jet aircraft in 1998. Orders were up 40.5 percent and deliveries 23.7 percent in 1998 over the same period in 1997. The number of airline transport pilots also continues to increase.

The FAA credits the healthy economy for the growth the major airlines have been experiencing. The agency's expectation for the healthy economy to continue is reflected in their forecast of the major airlines. The FAA projects passenger enplanements to increase at 3.4 percent annually over the FAA's next 12-year forecast period. However, traffic is expected to increase at an annual rate of only 2.8 percent as the air carriers attempt to maintain the current high load factor levels.

Regional/Commuter Airlines

The regional/commuter industry consists of airlines that report on DOT Form 298-C and DOT Form-41. Airlines operating aircraft with 60 seats or more report on DOT Form-41 and include all traffic, even when a smaller aircraft is utilized. All other airlines report on DOT Form 298-C. According to the FAA, there were 8 airlines reporting on DOT Form-41 and 94 on DOT Form 298-C nationally in 1998.

In the last five years, the regional/commuter traffic growth has averaged 5.3 percent annually, similar to the major airlines. However, the regional/commuter airlines continue to be the fastest growing sector of the commercial aviation industry as reflected in the RPMs growth. Since 1993, the RPMs have increased at an average annual rate of 10.3 percent resulting in all-time high load factors of 56.5 percent in 1998. The financial result was \$500 million for 1998 in combined operating profits. However, the profit levels were not constant throughout the regional/commuter industry. The larger regional/commuter airlines reported healthier profits than the smaller airlines, which included 22 carriers reporting losses ranging between \$176,000 and \$60.8 million. The financial condition is reflected in the orders for the 30 to 75 seats regional jets by the larger regional/commuter airlines. Orders for the regional jets totaled over 642 in 1997 and 1998 combined.

Similar to the larger counterparts, the economy is credited for the growth experienced by the regional/commuter industry. However, the higher rate of growth is primarily due to the integration of high-speed turboprops and regional jets into the fleet, which have increased the average passenger trip length.

The FAA forecast for the regional/commuter industry indicates not only that the industry will continue experiencing growth but also start playing a larger part in the commercial aviation industry. In 1998, the regional/commuter airlines enplaned 66.1 million passengers, 11.2 percent of all passenger traffic in scheduled domestic air service. By the year 2010, the FAA projects these airlines to carry 123.8 million passengers and to account for 14.0 percent of all domestic passenger enplanements. The number of passengers reflects a 5.4 percent annual growth. However, the growth is mostly expected for the larger regional/commuters airlines that report on DOT Form 41. These airlines operate and benefit from the larger and faster turboprops and regional jets.

General Aviation

Trends in general aviation activity indicate that the industry is on an upswing. FAA is logging an increase in annual traffic at combined FAA and contract towers and FAA en route centers, up 3.3 percent and 5.7 percent, respectively. Annual growth in the type of operations includes 1.9 percent for itinerant, 5.4 percent for local, and 4.3 percent for instrument operations. The traffic increase at FAA centers and instrument operations indicate that the upturn in business and corporate flying is underway. Recreational and instructional flying are also showing a positive trend as indicated by the increase in local operations, basically comprised of touch-and-go activity. However, the positive statistic on student pilots is probably the best indication that the environment for the general aviation industry is improving. The number of active student pilots increased by 1.7 percent in 1998 and the FAA processed 2.7 percent more student pilot certificates over 1997. Higher shipments of general aviation aircraft also indicate the good news for the industry. Piston powered aircraft almost doubled between 1994 and 1997 and shipments of jet aircraft increased from 171 in 1992 to 348 in 1997. During the first 9 months of 1998, turboprop aircraft shipments were up 3.2 percent.

Along with the healthy economy, growth in the general aviation industry is attributed to the passage of the General Aviation Revitalization Act in 1994 and a number of industry-wide programs instituted over the past several years, including *GA Team 2000*. The programs were designed to attract new pilots to general aviation.

General aviation forecasts by the FAA reflect continued growth. Hours flown are projected to increase at an average annual rate of 1.6 percent over the FAA's 12-year forecast period. The number of active and student pilots are expected to increase 1.5 percent and 2.3 percent annually, respectively. In regards to the general aviation active fleet, annual growth is projected at 1.0 percent through the forecast period. However, the character of the fleet mix is expected to change towards business use with the more expensive and sophisticated turbine-powered aircraft, which include turboprops and turbojets, outpacing the piston aircraft. Similarly, the turbine-powered helicopters are also anticipated to increase at 1.0 percent annually. The piston helicopters are predicted to stay constant through the FAA's forecast period. Combined, the helicopters are expected to account for 3.4 percent of the general aviation fleet.

3.3.2 Socioeconomic Indicators

Economy

The robust period the aviation industry has been experiencing is attributed to the increased economic activity. The current U.S. economic expansion is well into its eighth year, and most likely will become the second longest expansion in post-war history according to the FAA. Gross Domestic Product (GDP) growth has averaged 2.9 percent over the eight-year period and 3.3 percent over the past five years. In addition, inflation in 1998 was at its lowest level since 1965 when inflation also measured 1.4 percent as per the consumer price index.

There is general agreement among most economic forecasters that the U.S. economy will continue to sustain growth. GDP is projected to increase at an average annual growth rate of 2.3 percent over the FAA's 12-year period, with the consumer price index increasing at an average annual rate of 2.3 percent. As an indication, the current rise in fuel prices reflects the increased demand for oil that results from increased economic activity.

The healthy national economy is also being felt closer to Page Municipal Airport, as reflected in the unemployment rates. The unemployment rate for Arizona fell from 6.4 percent in 1994 to 4.1 percent in 1998. For Coconino County, it dropped 1.4-percentage points in the last five years to 5.4 percent in 1998. Similarly, the City of Page's unemployment rate dropped 1.5-percentage points from 7.3 percent in 1994 to 5.8 percent in 1998.

Population

Population trends are also aviation activity indicators. However, the activity at Page Municipal Airport is more of a reflection of the population closely associated with the Airport. In the past five years, the population in Arizona, Coconino County, and City of Page averaged an increase of 4.01 percent, 3.14 percent, and 5.95 percent annually, respectively. The Arizona Department of Economic Security Research Administration (DES) projects the growth to continue. DES predicts the population in Arizona to exceed 7.3 million by the year 2020, averaging an annual growth rate of 2.02 percent. Coconino County's population is expected to reach almost 170,000, averaging 1.62 percent growth annually. It is anticipated that the population in the City of Page will average 1.88 percent annual growth, reaching over 13,000 by 2020 from just over 9,000 in 1998.

3.4 FORECASTS

3.4.1 Historical Data

Historical data is the basis for any forecast, and the forecasting analysis for this study began with historical activity logged in the FAA TAFDS. However, the PAC rejected the FAA's activity levels and recommended the Study team formulate the Master Plan 2000 forecasts based on direct input from the airport users. In addition, PAC requested that the Study expand on the FAA's user categories. Although the Committee realizes that the FAA's categories are all inclusive, concern was expressed that the FAA's broad generalization was neglecting the different nature and consequently the different needs of the various airport users. For example, activity relating to the National Park Service (NPS), Salt River Project (SRP), and Navajo Nation would generally be categorized under FAA's general aviation, which PAC felt was inaccurate. The Committee's view was that the NPS's, SRP's, and Navajo Nation's missions and needs are too different from other activity grouped under general aviation for them to be grouped accordingly. Therefore, the Study team proceeded with the forecasting analysis by gathering activity data from the airport users and expanding on the FAA's user categories.

The different FAA forecast elements (**Exhibit 3-1**) for effective airport planning consist of passenger enplanements, based aircraft/aircraft mix, and aircraft operations. Estimates of the four major FAA user categories are developed for each element. The categories consist of air carriers, air taxi/commuters, general aviation, and military. Estimates of the user categories are also developed for the different types of operations (itinerant and local). For the purpose of this study, the FAA user categories were expanded to better reflect the true level and nature of the activity at Page Municipal Airport, while maintaining FAA identity of the users.

Sky West provided scheduled commuter service at Page Municipal Airport until the summer of 1997. The service was then provided by Scenic Airlines until March 1999, when it was acquired by Sunrise Airlines. Sunrise Airlines also acquired the air tour service, which it provides under the name, Lake Powell Air. For simplicity, historical data on commuter and air tour services is listed under Sunrise Airlines.

Upon review, the activity data gathered from the airport users varied from the data logged by the FAA. The FAA data is based on information submitted to the FAA by the carriers. In the case of Page Municipal Airport, Sunrise Airlines submits its information via DOT Form 298-C. The information is then supplemented by a FAA survey of the air taxi operator, state aviation commission reports, and airport manager reports. The difference between the data logged by the FAA and from the airport users is probably attributed to the fact that since 1994, the Airport has gone through three different air taxi operators and the data were probably handled differently by each one. In addition, DOT Form 298-C does not require that all traffic data be submitted, and until recently, a standard or method for gathering and recording the Page Municipal Airport activity did not exist, contributing to the variance of the data.

Exhibit 3- 1 Categories of Airport Users Flow Chart

FAA ELEMENT	OPERATION TYPE	FAA USER CATEGORY	STUDY USER CATEGORY
Enplanements		Air Taxi/ Commuters	<u>Scheduled Commuters</u> Sunrise Airlines (air service)
			<u>Nonscheduled/On-Demand</u> Sunrise Airlines (tours & charters) Classic Aviation (tours & charters)
		General Aviation	<u>Miscellaneous</u> Classic Aviation (medical)
Based Aircraft and Fleet Mix			<u>Tenants</u> Sunrise Airlines Classic Aviation Private (business, recreational, etc.) NPS SRP Navajo Nation
Operations	Itinerant Operations	Air Taxi/ Commuters	<u>Scheduled Commuter</u> Sunrise Airlines (air service)
			<u>Nonscheduled/On-Demand</u> Sunrise Airlines (tours & charters) Classic Aviation (tours & charters)
		General Aviation	<u>Miscellaneous</u> Sunrise Airlines (maint. & freight) Classic Aviation (medical)
			<u>Private</u> Business, Recreational, etc
			<u>Government (Non-military)</u> NPS SRP Navajo Nation
		Military	<u>Military</u> Army
	Local Operations	General Aviation	<u>Commercial Training</u> Sunrise Airlines Classic Aviation
			<u>Private Training</u> Students, Personal, etc.
			<u>Government (Non-military)</u> NPS
		Military	<u>Military Training</u> Army

Historical Enplanements

Enplanements primarily refer to passengers departing an airport on an aircraft destined to another airport at another city. This definition is expanded as it relates to Page Municipal Airport. Air tours account for the majority of activity at Page Municipal Airport and consequently play a significant role at the Airport. Included with the air tours are the enplanements from charter operations. The level of enplanements from the charters is minimal and there is not enough information to segregate the two. The impact from the air tours makes it essential to include enplanements from the air tours in forecasting the timing and level of enplanement demand. Supporting this effort is the fact that the fixed based operator (FBO) providing the essential air service also accounts for the majority of the air tours conducted from the Airport, utilizing the same facilities for both services.

This study also recognizes the medical transport enplanements for Classic Aviation, the second FBO located at the Airport. Classic Aviation provides medical transport service to the community in addition to air tours. The enplanements are included for accountability, but handled separately for the facility requirements analysis.

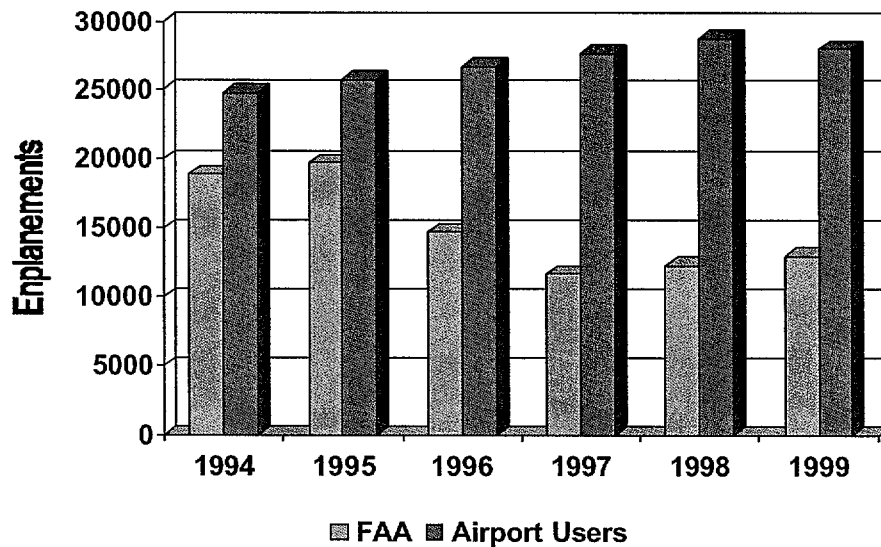
Before 1996, FAA was logging 30 percent less enplanements than what the airport users indicated (**Table 3-1 and Exhibit 3-2**). Between 1996 and 1997, FAA showed a decline in enplanements, while enplanements seemed to increased per the airport users. Sunrise Airlines was showing continuous growth in enplanements through 1998, which was compounded when Classic Aviation entered the air tour market. After 1998, Page Municipal Airport experienced a dropped in enplanements and in particularly with the operations. The drop is due to the arrangements that went into the changing of ownership of the air tour operations. When Sunrise Airlines acquired the commuter and air tour service from Scenic Airlines, it only obtained partial of the air tour operations. A different company acquired Scenic's air tours originating from Las Vegas and operating regularly in and out of Page using Twin Otters. The company shifted the operations from Page to Grand Canyon causing a drop in enplanements and operations at Page Municipal Airport.

Table 3- 1: Historical Enplanements

Year	Scheduled Commuter	Nonscheduled/ On-Demand		Misc.	Total Enplanements	FAA Enplanements
	Sunrise Airlines	Sunrise Airlines	Classic Aviation	Classic Aviation		
1994	4,522	20,000	0	265	24,787	18,874
1995	4,691	20,750	0	292	25,733	19,704
1996	4,861	21,500	0	321	26,682	14,695
1997	5,030	22,250	0	353	27,633	11,638
1998	5,200	23,000	189	388	28,777	12,296*
1999	4,200	23,000	343	475	28,018	12,955*

*Represents FAA projections.

Exhibit 3- 2: Historical Enplanements



Notes: FAA levels for 1998 and 1999 represent the agency's projections.
The Master Plan 2000 forecast uses 1998 as the base year for the study projections

Historical Based Aircraft and Fleet Mix

The only information on based aircraft that was consistent and/or complete among the airport users were 1999 estimates (**Table 3-2**). In 1999 Sunrise Airlines had six Jetstreams and 12 Cessnas based at Page Municipal Airport. The Jetstreams supported the commuter routes while the Cessna were used for the air tours. Sunrise Airlines is using Page Municipal Airport as its headquarters for all operations to include maintenance service, therefore the number of based aircraft at the airport are not solely associated with the passenger service operations servicing the City of Page. Classic Aviation had three helicopters (Bell 296 series) based at the Airport in 1999, and airport staff provided an estimate of 30 based private aircraft, consisting of single-engine, multi-engine, and helicopter aircraft. The total number of based aircraft in Page Municipal Airport in 1999 was estimated at 54 aircraft, 20 more than FAA's estimate, which had estimated 34 based aircraft for the same year.

The fleet mix of the based aircraft at Page Municipal Airport consists of single-engine, multi-engine, and helicopter aircraft. The single-engine aircraft refers to the Cessna series and various private models. There are 36 single-engine aircraft based at the airport at 67 percent. The Jetstream 31 commuter, King Air, and other general aviation types make up the multi-engine aircraft found at Page Municipal Airport. They account for 22 percent with 12 based aircraft. The helicopters represent the Bell 206 and private helicopter models. The airport has 6 based helicopters (11 percent).

Table 3- 2: Based Aircraft—1999 Estimates

Airport Tenants	Equipment	1999 Estimates
Sunrise Airlines	BA J-31	6
	Cessna's	12
Classic Aviation	Bell 206 Series	3
Private	Single-Engine	23
	Multi-Engine	4
	Helicopters	3
National Park Service	Cessna	1
Navajo Nation	King Air	1
Salt River Project	King Air	1
Total		54*

Source: Staff research, 1999. *Refer to Table 2-1, pg. 17 in Chapter 2, Facility Inventory.

Historical Operations

Historical Itinerant Operations

Scheduled commuter estimates for 1994 and 1995 were calculated based on records provided by the Airport (**Table 3-3**). Interpolation was applied for 1996 and 1997 estimates. The level of operations for 1999 is based on the posted scheduled flights to and from Phoenix and Las Vegas (through Henderson Airport) servicing the City of Page. The commuter has since begun direct flights in and out of Las Vegas.

Although it is recognized that other nonscheduled/on-demand flights are conducted at Page Municipal Airport by operators other than Sunrise Airlines and Classic Aviation (i.e. Air Vegas Inc.), the level of annual operations are insignificant having minimal impact on the airport's aviation activity as a whole. Therefore, only operations for Sunrise Airlines and Classic Aviation are presented for nonscheduled/on-demand service. As mentioned earlier, historical data show a drop in unscheduled/on-demand operations (air tours) occurred from 1998 to 1999. The decrease can be attributed to a portion of the Las Vegas tour operations (conducted by Scenic Airlines) moving from Page to the Grand Canyon Airport, due to the acquisition of Scenic Airlines by Sunrise Airlines in 1999.

Table 3- 3: Historical Itinerant Operations—Air Taxi/Commuters

Year	Scheduled Commuters	Non-scheduled/On-Demand		Totals	FAA Totals
	Sunrise Airlines	Sunrise Airlines	Classic Aviation		
1994	1,539	13,922	0	15,461	2,129
1995	1,543	14,591	0	16,134	2,129
1996	2,981	18,515	0	21,496	2,102
1997	4,420	22,439	0	26,859	15,595
1998	5,858	26,363	162	32,383	16,451*
1999	2,080	20,250	234	22,564	16,967*

*Represents FAA projections.

Additional itinerant operations include miscellaneous, private, government (non-military), and military flights (Table 3-4). Miscellaneous operations refer to maintenance and freight flights conducted by Sunrise Airlines and Classic Aviation's medical transports. Sunrise Airlines has based its maintenance operation in Page Municipal Airport, and consequently cycles its fleet through the airport for maintenance service. The company also provides small freight service into the City of Page and surrounding communities. Small freight transported includes blood, water, and banking material. Other Sunrise operations besides maintenance and freight (i.e. charter) are included with the estimates. Small freight and charter operations are minimal, but not enough information is available at this time to list them separately. In addition to the air tours, Classic Aviation also conducts medical transports, which include on-site and facility-to-facility medical transports. Private operations consist of business, recreational, and student (non touch-and-go) operations.

Table 3- 4: Historical Itinerant Operations—General Aviation & Military

Year	Miscellaneous Operations		Private	Government (Non-military)			Military	Totals	FAA Totals
	Sunrise Airlines	Classic Aviation	Business, Recreation, etc	NPS	SRP	Navajo Nation	Army		
1994	0	527	9,685	780	832	72	29	11,925	15,768
1995	0	579	10,158	780	832	72	41	12,462	15,768
1996	0	637	14,218	780	832	72	44	16,583	14,169
1997	0	701	18,275	780	832	72	48	20,708	7,508
1998	0	771	22,450	780	832	72	51	24,956	7,508*
1999	2,420	959	12,287	780	832	72	51	17,401	7,508*

*Represents FAA projections.

In addition to NPS, SRP, and the Navajo Nation, other non-military government agencies (i.e. Fish & Game, Department of Public Safety) operate in and out of Page Municipal Airport. However, their level of operations are insignificant having minimal impact on the airport's aviation activity as a whole. Therefore, only operations for NPS, SRP, and the Navajo Nation are presented. NPS operations are based on three operations per day, at five days a week, and SRP operations on four operations per day, at four days a week. Navajo Nation operations are estimated at an average of six operations per month. Military operations consist of Army helicopter flights. Other military operations occur at insignificant levels. Table 3-5 lists the total number of itinerant operations along with the FAA totals.

Table 3- 5: Total Historical Itinerant Operations

Year	Air Taxi/ Commuters	GA and Military	Totals	FAA Totals
1994	15,461	11,925	27,386	17,901
1995	16,134	12,462	28,596	17,903
1996	21,496	16,583	38,080	16,271
1997	26,859	20,708	47,567	23,103
1998	32,383	24,956	57,339	23,959*
1999	22,564	17,401	39,965	24,475*

*Represents FAA projections.

Historical Local Operations

Local operations are associated with training such as touch-and-go operations. The majority of the airport users estimate that one percent of their total operations represent training conducted at the Airport (**Table 3-6**). The only exception is Classic Aviation, which estimates that 2.5 percent of their total operations are training operations. Of the non-military government operations, only NPS conducts training flights at the Airport.

Table 3- 6: Historical Local Operations

Year	General Aviation				Military	Totals	FAA Totals
	Commercial Training		Private Training	Gov't Training	Military Training		
	Sunrise Airlines	Classic Aviation	Misc.	NPS	Army		
1994	156	14	98	8	0	276	14,542
1995	163	15	103	8	0	289	14,542
1996	217	16	144	8	0	385	13,891
1997	171	18	185	8	0	482	7,182
1998	325	19	227	8	1	580	7,182*
1999	250	37	124	8	1	420	7,182*

*Represents FAA projections.

Total Historical Operations

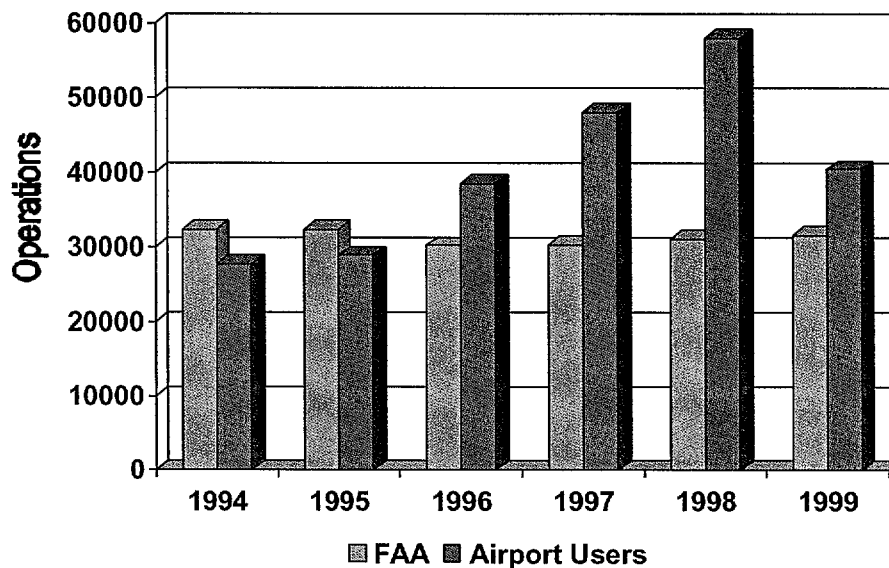
As the tables indicate, there is a difference between FAA's historical data and that provided by the airport users. The difference is more apparent when the operations are broken down to the type of operations. The airport users indicate higher levels of itinerant operations than logged by the FAA. On the other hand, the airport users suggest significantly lower local operations than the FAA. The gap is such that when the operations are totaled, the numbers from the FAA and airport users still vary (**Table 3-7 and Exhibit 3-3**). The likely reason for the inconsistency is probably due to variance in how the information was recorded and submitted to the FAA. Per the PAC's recommendation, the Master Plan 2000 will be formulated based on the historical data provided by the airport users.

Table 3- 7: Total Historical Operations

Year	Itinerant Operations	Local Operations	Total Operations	FAA Totals
1994	27,386	276	27,662	32,443
1995	28,596	289	28,885	32,445
1996	38,080	385	38,465	30,162
1997	47,567	482	48,049	30,285
1998	57,339	580	57,919	31,141*
1999	39,965	420	40,385	31,657*

*Represents FAA projections.

Exhibit 3- 3: Total Historical Operations



Notes: FAA levels for 1998 and 1999 represent the agency's projections.

The Master Plan 2000 forecast uses 1998 as the base year for the study projections

3.4.2 Enplanement Forecast

Sunrise Airlines anticipates their commuter service enplanements to grow to 5,000 in the year 2000, and ultimately reach the 12,000 level (**Table 3-8**). In reference to their air tours, Sunrise Airlines anticipates enplanements to grow to 2,500 plus an additional 2,000 specifically for river tours in the year 2000. After 2000, the river tours are projected to remain level at 2,000 throughout the planning period, and air tour enplanements are anticipated to grow 5 percent annually reaching more than 68,300 total enplanements in 2020. Classic Aviation had projected annual growth rates of 15 percent and 10 percent of its air tours and medical transport enplanements, respectively.

Table 3- 8: Projected Enplanements

Year	Scheduled Commuter	Nonscheduled/ On-Demand		Other	Total Enplanements
	Sunrise Airlines	Sunrise Airlines	Classic Aviation	Classic Aviation	
2000	5,000	27,000	394	523	32,917
2005	6,750	33,907	793	841	42,292
2010	8,500	42,722	920	976	53,118
2015	10,250	53,973	1,066	1,131	66,420
2020	12,000	68,332	1,236	1,311	82,880

With indicators supporting steady growth in enplanements, the Master Plan 2000 forecasts total enplanements to reach almost 83,000 by the end of the planning period at an average annual growth rate of 4.7 percent. Nationally, commuter enplanements more than doubled between 1989 and 1996 according to the Arizona Air Service Study, and the FAA projects commuter enplanements will increase 5.4 percent annually. The Department of Economic Security indicated that the population for Arizona, Coconino County, the City of Page had been growing at an annual rate of 4.0 percent, 3.1 percent, and 6.0 percent, respectively, and projects the population in the City of Page will average 1.9 percent growth annually through the planning period.

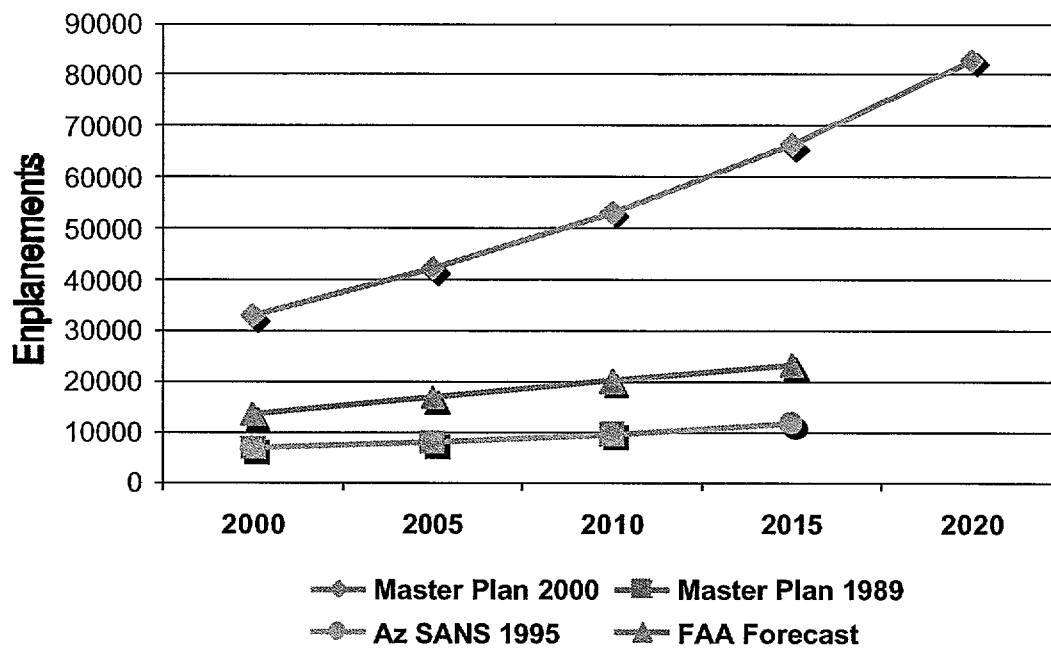
The enplanement levels for the Master Plan forecast are higher compared to enplanement forecasts projected by other sources (Table 3-9 and Exhibit 3-4). However, the average annual growth rate (AAGR) among the different forecasts is comparable. The higher levels are attributed to the actual higher historical levels indicated by the airport users.

Table 3- 9: Comparison of Projected Enplanements

Year	Master Plan 2000 Forecast	FAA Forecast	Master Plan 1989 Forecast	Az SANS 1995 Forecast
2000	32,917	13,613	6,904	6,904
2005	42,292	16,904	7,997	8,040
2010	53,118	20,196	9,722	9,727
2015	66,420	23,487	N/A	11,768
2020	82,880	N/A	N/A	N/A
AAGR	4.7%	4.0%	3.3%	5.5%

AAGR = average annual growth rate

Exhibit 3- 4: Comparison of Projected Enplanements



3.4.3 Based Aircraft Forecast and Fleet Mix

Sunrise Airlines estimates that two additional Jetstreams will be added to their fleet for each new passenger service route added to its network, and two additional Cessna series for each additional 10-15 tour enplanement seats needed. Classic Aviation anticipated the size of their fleet to not exceed eight helicopters.

Nationally, commuter airplanes only grew from 1,806 to 2,127 between 1986 and 1996; however, there were higher shipments of general aviation aircraft through 1997. Piston-powered aircraft almost doubled between 1994 and 1997, and shipments of jet aircraft increased from 171 in 1992 to 348 in 1997. The Arizona State Aviation Needs Study (1995) projects 50 percent growth in the total number of based aircraft between 1995 and 2015 for Coconino County and Page Municipal Airport. Specifically, this includes 50 percent growth in single- and multi-engine aircraft for the County, while Airport projections include 50 percent growth only for the single-engine fleet.

With an average of one new route a year through 2005 for Sunrise Airlines, the number of based Jetstreams are projected to grow at two per year (**Table 3-10**). Thereafter, the number is anticipated to steadily grow to a total of 30 based Jetstreams by the end of the planning period. The number of based Cessnas supporting Sunrise Airlines' tours is anticipated to grow to 36 by the end of the planning period, three times existing levels and similar to its total tour enplanement growth projection. Reflective of its enplanement growth projection, Classic Aviation's estimate of one additional helicopter every other year is applied through the year 2005, and then one every five years thereafter reaching their projected maximum of eight helicopters by the year 2015. The number of based private aircraft is projected to steadily grow to 57 by the year 2020, almost twice as many as in 1999 and reflective of the other aviation activity at the Airport. Based military aircraft are not anticipated at Page Municipal Airport. In reference to the fleet mix (**Table 3-11**), based aircraft are expected to average 60 percent single-engine, 29 percent multi-engine, and 11 percent helicopters through the planning period.

Table 3- 10: Projected Based Aircraft

Airport Tenants	Equipment	2000	2005	2010	2015	2020
Sunrise Airlines	BA J-31	8	18	22	26	30
	Cessnas	13	19	25	30	36
Classic Aviation	Bell 206 Series	3	6	7	8	8
Private	Single-Engine	24	29	34	39	44
	Multi-Engine	4	5	6	7	8
	Helicopters	3	4	4	5	5
NPS	Cessna	1	1	1	1	1
Navajo Nation	King Air	1	1	1	1	1
SRP	King Air	1	1	1	1	1
Total Based Aircraft		58	84	101	118	134

Table 3- 11: Projected Based Aircraft Fleet Mix

Year	Single-Engine	Multi-Engine	Helicopter	Total
2000	38	14	6	58
2005	49	25	10	84
2010	60	30	11	101
2015	70	35	13	118
2020	81	40	13	134

The number of based aircraft in Page Municipal Airport are anticipated to more than double from 58 aircraft in 2000 to 134 aircraft in 2020 for the Master Plan 2000 (Table 3-12). The annual growth rate averages at 4.3 percent. Comparably, the previous Master Plan (1989) projected 80 based aircraft by 2010 at an average annual growth rate of 2.8 percent and the Arizona SANS (1995) indicated 51 based aircraft at an average annual growth rate of 1.3 percent by 2015. Ironically, the FAA does not project any additions to the 34 based aircraft it has logged for Page Municipal Airport since 1996; although, its own national projections indicate continued growth in regards to aircraft fleet. The higher levels projected in the Master Plan 2000 forecast is attributed to the higher base numbers provided by the airport users, and also by the anticipation of the fleet increase to support the projected growth of the commercial services (air service and tours) at the Airport.

Table 3- 12: Comparison of Projected Based Aircraft

Year	Master Plan 2000 Forecast	FAA Forecast	Master Plan 1989 Forecast	Az SANS 1995 Forecast
2000	58	34	61	39
2005	84	34	68	43
2010	101	34	80	47
2015	118	34	N/A	51
2020	134	N/A	N/A	N/A

3.4.4 Operations Forecast

Itinerant Operations

For the scheduled commuter service, the number of annual operations for the year 2000 is estimated based on the announcement that the twice-weekly flights to Las Vegas will be increasing to daily service. The estimated 2,600 annual operations for the year 2000 was maintained until a load factor of 32 percent was obtained. Thereafter, the 32 percent load factor was used to forecast additional operations based on the projected enplanements.

In reference to the nonscheduled/on-demand operations, load factors were applied based on forecast enplanements in calculating projection (Table 3-13). A load factor of 50 percent was applied for Sunrise Airlines air tours, which include charters. Sunrise Airlines other operations (maintenance and freight) were estimated at an annual growth rate of 12 percent for the year 2000 and 3.5 percent thereafter (Table 3-14). The percent growth is more a reflection of the increase in the aircraft flying in and out of Page Municipal Airport for maintenance service. Sunrise's small freight operations are very minimal and the airline has indicated it is not their

intentions to make any changes. Classic Aviation projections were based on 65 percent and 25 percent load factors for the air tours and medical transports, respectively.

Table 3- 13: Itinerant Operations—Air Taxi/Commuters

Year	Scheduled Commuters	Non-scheduled/On-Demand		Totals
	Sunrise Airlines	Sunrise Airlines	Classic Aviation	
2000	2,600	18,000	197	20,797
2005	2,600	22,605	397	25,602
2010	2,833	28,482	460	31,775
2015	3,417	35,982	533	39,932
2020	4,000	45,555	618	50,173

Table 3- 14: Itinerant Operations—General Aviation & Military

Year	Miscellaneous Operations		Private	Other Government (Non-military)			Military	Totals
	Sunrise Airlines	Classic Aviation	Business, Recreation, etc	NPS	SRP	Navajo Nation	Army	
2000	2,710	1,045	12,814	780	832	72	51	18,304
2005	3,219	1,683	15,447	780	832	72	51	22,084
2010	3,823	1,951	18,079	780	832	72	51	25,588
2015	4,541	2,262	20,712	780	832	72	51	29,250
2020	5,393	2,622	23,345	780	832	72	51	33,095

Private operations per based aircraft are projected to remain constant throughout the planning period. Historically, operations for NPS, SRP, the Navajo Nation has also remained stable. Therefore, their operations are projected to remain level. With the exception of special events such as air shows, military operations have remained and are projected to remain level as well. **Table 3-15** lists the total itinerant operations forecast.

Table 3- 15: Total Itinerant Operations

Year	Air Taxi/Commuters	GA and Military	Totals
2000	20,797	18,304	39,102
2005	25,602	22,084	47,685
2010	31,775	25,588	57,364
2015	39,932	29,250	69,182
2020	50,173	33,095	83,268

Local Operations

Local operations were projected at one percent of the total operations based on the indication from the airport users (**Table 3-16**). Classic Aviation was the exception with 2.5 percent used.

Table 3- 16: Local Operations

Year	General Aviation				Military	Totals	FAA Totals
	Commercial Training		Private Training	Other Gov't Training	Military Training		
	Sunrise Airlines	Classic Aviation	Misc.	NPS	Army		
2000	235	32	129	8	1	405	7182
2005	287	53	156	8	1	505	7182
2010	355	62	183	8	1	608	7182
2015	444	72	209	8	1	733	7182
2020	555	83	236	8	1	882	7182

Total Operations

Aircraft operations are anticipated to exceed 84,000 by 2020 at Page Municipal Airport (**Table 3-17**). The aircraft operation levels of the Master Plan 2000 forecast are higher compared to operation forecasts projected by other sources (**Table 3-18 and Exhibit 3-5**). However, the previous master plan projected 120,000 operations in 2010 compared to almost 58,000 operations estimated in this study.

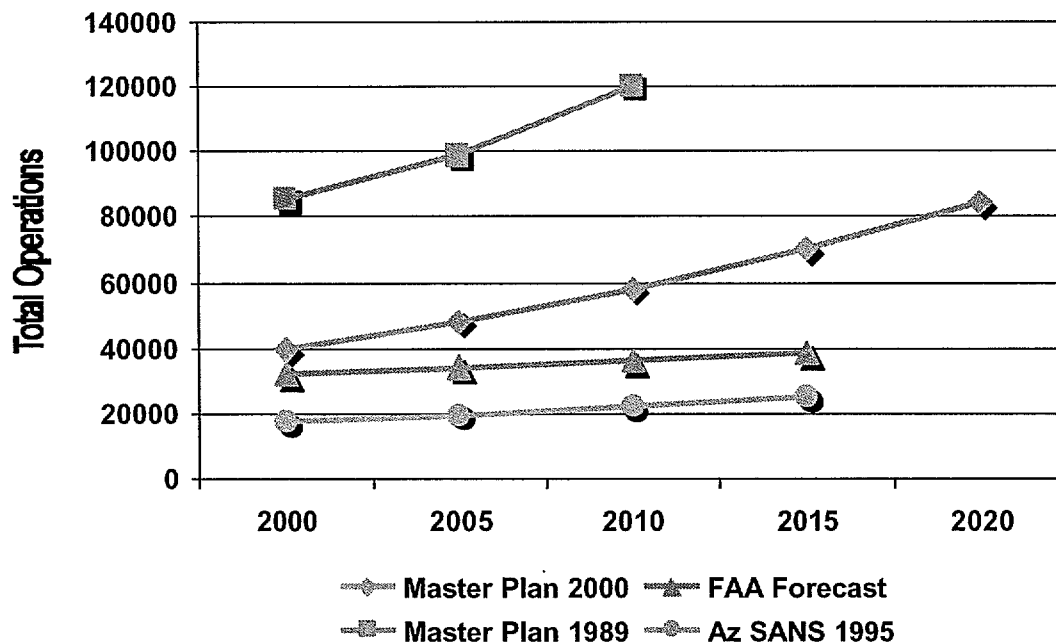
Table 3- 17: Total Operations

Year	Itinerant Operations	Local Operations	Total Operations	FAA Totals
2000	39,102	405	39,507	32147
2005	47,685	505	48,190	34256
2010	57,364	608	57,971	36253
2015	69,182	733	69,915	38493
2020	83,268	882	84,150	NA

Table 3- 18: Comparison of Projected Operations

Year	Master Plan 2000 Forecast	FAA Forecast	Master Plan 1989 Forecast	Az SANS 1995 Forecast
2000	39,507	32,147	85,400	17,378
2005	48,190	34,256	98,600	19,628
2010	57,971	36,253	120,000	22,125
2015	69,915	38,493	N/A	24,965
2020	84,150	N/A	N/A	N/A
AAGR	3.9%	1.6%	3.2%	2.5%

Exhibit 3- 5: Comparison of Total Operations



Operation Fleet Mix

Page Municipal Airport experiences everything from jet to single-engine aircraft activity at its facility. However, jet operations equate to less than one percent of the total operations having minimal impact on the airport's aviation activity as a whole. Therefore, jets are not presented as part of the operation fleet mix. In estimating the fleet mix based on operation projection, an estimate of 70 percent single-engine and 30 percent multi-engine was applied for private itinerant and training operations (Table 3-19). Training conducted by Sunrise Airlines was estimated at 82 percent single-engine and 18 percent multi-engine. Helicopters are used for military operations, including training. Operations conducted by other types of military aircraft are insignificant having minimal impact on the airport aviation activity as a whole. Thus, only military helicopter operations are presented.

Table 3- 19: Operations Fleet Mix

Year	Single-engine		Multi-engine		Helicopters		Total
	Ops	%	Ops	%	Ops	%	
1998	43,284	75%	13,632	24%	1,004	1%	57,919*
2000	28,033	71%	10,148	26%	1,326	3%	39,507
2005	34,542	72%	11,463	24%	2,185	5%	48,190
2010	42,336	73%	13,111	23%	2,524	4%	57,971
2015	51,771	74%	15,226	22%	2,918	4%	69,915
2020	63,297	75%	17,479	21%	3,375	4%	84,150

*The difference in operations from 1998-1999 reflect the segment of tour operations conducted by Scenic Airlines moving to the Grand Canyon Airport when Sunrise Airlines acquired Scenic in 1999.

Based on the forecast of aircraft operations in Page Municipal Airport and activity assumptions, single-engine aircraft are expected to account for approximately three-quarters of the total operations by the end of the planning period. Multi-engine aircraft are projected at 21 percent with the balance attributed to helicopters.

Instrument Approach Operations

An instrument operation is an approach to an airport utilizing the airport's navigational aids for guidance. Forecasting this type of operation is the basis for identifying the airport's navigational aid requirements for the planning period. Generally, instrument approaches are intended for pilots' use during inclement weather, but are not restricted for that time only. All commuters and some of the general aviation and local operations consist of instrument approach operations at Page Municipal Airport. They include instrument approaches conducted by expensive and sophisticated general aviation aircraft and students practicing instrument operations. For the Master Plan 2000 forecasts, it is assumed that 100 percent of the commuters, one percent of the itinerant general aviation, and 10 percent of the local operations make up the total number of instrument approach operations (**Table 3-20**).

Table 3- 20: Instrument Approach Operations

Year	Commuters	GA	Local	Total
1998	5,858	249	58	6,165
2000	2,600	183	41	2,824
2005	2,600	220	51	2,871
2010	2,833	255	61	3,149
2015	3,417	292	73	3,782
2020	4,000	330	88	4,418

Operation Peaking Characteristics

Airports are not planned to accommodate the highest volume of activity or for ultimate capacity. It can not be justified economically. Instead, practical capacity or a reasonable level of activity is used in identifying the adequacy of facilities and planning airport development. However, peaking levels or peaking characteristics of aviation activity are used to define the threshold between reasonable and ultimate levels of activity for airport master planning.

Peaking characteristics of aviation activity include peak month, design day, and design hour. Peak month refers to the calendar month when peak operations occur. Design day is calculated as the average day of the peak month by dividing the peak month operations by the number of days in the month. Design hour represents the peak hour of the design day.

The busiest season for aviation activity at Page Municipal Airport is the summer months primarily fed by the air tours and private general aviation activity, which combined make up approximately 80 percent of the total operations. The peak time of the busy season spans for a two-month period, usually between July and August. The air tour operators indicate that 30 percent of their annual operations take place during the two-month peak period. Apron tiedown occupancy levels indicate similar activity levels for the transient operations, which are primarily private general aviation. For the purpose of the master plan, the 30 percent level was evenly split between the two-month peak period at 15 percent each month and applied to annual

operations in defining the peak month for the study (Table 3-21). The design hour was estimated at 12 percent of the design day, with 28 percent of the design hour being transient operations.

Table 3- 21: Operation Peaking Characteristics

Year	Annual Operations	Peak Month	Design Day	Design Hour	Design Hour Transient Ops
1998	57919	8688	280	34	9
2000	39507	5926	191	23	6
2005	48190	7229	233	28	8
2010	57971	8696	281	34	9
2015	69915	10487	338	41	11
2020	84150	12623	407	49	14

3.4.5 Forecasts Summary

Table 3-22 provides a summary of this Master Plan forecasts. As shown in the table, enplanements are projected to grow from 28,777 in 1998 to 82,954 by the year 2020, experiencing an average growth rate of 4.7 percent. The nonscheduled/on-demand operators are anticipated to continue logging the majority of the enplanements. Based aircraft at Page Municipal Airport are expected to increase to 134 aircraft by 2020. Operations are projected at 3.9 percent average annual growth rate, exceeding 84,000 by the end of the planning period.

This chapter has provided forecasts of aviation demand for the Page Municipal Airport. Chapter 4 will translate these forecasts into future facility requirements for the airport through twenty-year planning period (2020).

Table 3- 22: Master Plan 2000 Forecasts Summary

Elements	1998	2000	2005	2010	2020	Avg %	Average Annual Growth Rate
<u>Enplanements</u>							
Scheduled Commuters	5,200	5,000	6,750	8,500	12,000	14%	
Nonsched/On-Demand	23,189	27,394	34,700	43,642	69,643	84%	
Other	388	523	841	976	1,311	2%	
Total	28,777	32,917	42,291	53,118	82,954	100%	4.7%
<u>Based Aircraft/Fleet Mix</u>							
Single-Engine	36	38	49	60	81	60%	
Multi-Engine	12	14	25	30	40	30%	
Helicopters	6	6	10	11	13	10%	
Total	54	58	84	101	134	100%	4.3%
<u>Operations</u>							
Operation Types							
• Itinerant	57,339*	39,102	47,685	57,363	83,268	99%	
• Local	580	405	505	608	882	1%	
• Total	57,919	39,507	48,190	57,971	84,150	100	3.9%
<u>User Categories</u>							
• Sched. Commuters	5,917	2,626	2,626	2,861	4,039	5%	
• Nonsched/On-Demand	26,794	18,384	23,241	29,241	46,649	55%	
• Miscellaneous	787	3,810	4,976	5,863	8,137	10%	
• Private GA	22,677	12,943	15,603	18,262	23,581	28%	
• Gov't (non-military)	1,692	1,692	1,692	1,692	1,692	2%	
• Military	52	52	52	52	52	<1%	
• Total	57,919*	39,507	48,190	57,971	84,150	100%	3.9%
<u>Fleet Mix</u>							
• Single-Engine	43,283	28,033	34,542	42,336	63,296	75%	
• Multi-Engine	13,632	10,148	11,463	13,111	17,479	21%	
• Helicopters	1,004	1,326	2,185	2,524	3,375	4%	
• Total	57,919	39,507	48,190	57,971	84,150	100%	3.9%
<u>Instrument Operations</u>							
• Itinerant	6,107	2,783	2,820	3,088	4,330	98%	
• Local	58	41	51	61	88	2%	
• Total	6,165	2,824	2,871	3,149	4,418	100%	

Note: The difference in operations from 1998-2000 can be attributed to the segment of tour operations conducted by Scenic Airlines moving to the Grand Canyon Airport when acquired by Sunrise Airlines in 1999.